**WHAT IS CLAIMED IS:**

1. A medium for preparing duct-like structure cells derived from post-natal islets of Langerhans or acinar cells, which comprises in a physiologically acceptable culture medium an effective amount of:

a) a solid matrix environment for a three-dimensional culture; and

b) a factor for developing, maintaining and expanding said dedifferentiated intermediate cells, said first factor inducing a rise in intracellular cAMP.

2. A medium according to claim 1, wherein said factor is derived from acinar cells.

3. A medium according to claim 1, wherein said culture medium comprises DMEM/12 supplemented with an effective amount of fetal calf serum.

4. A medium according to claim 1, wherein said factor is selected from the group consisting of cholera toxin (CT), forskolin, high glucose concentrations, a promoter of cAMP, and EGF.

5. A medium according to claim 1, wherein said matrix protein comprises one or more of laminin, collagen type I and Matrigel™.

6. A method for preparing duct-like structure cells derived from post-natal islets of Langerhans or acinar cells, which comprises contacting said cells with a medium according to any one of claims 1 to 5.

7. An *in vitro* method for islet cell expansion, which comprises the steps of:

a) inducing cystic formation in cells cultured in a medium of the present invention, wherein said cells are selected from the group consisting of acinar cells and cells derived from post-natal islets of Langerhans cells to obtain a duct-like structure;

b) expanding cells of said duct-like structure; and

c) inducing islet cell differentiation properties of the expanded cells of said duct-like structure to become insulin-producing cells.

8. An *in vitro* method for producing cells with at least bipotentiality, which comprises the steps of:

a) inducing cystic formation in cells cultured in a medium of the present invention, wherein said cells are selected from the group consisting of acinar cells and cells derived from post-natal islets of Langerhans cells from a patient to obtain a duct-like structure; whereby when the duct-like structure cells are introduced *in situ* in the patient, the cells are expanded and islet cell differentiation properties are induced to become *in situ* insulin-producing cells.

9. A method for the treatment of diabetes mellitus in a patient, which comprises the steps of

a) inducing cystic formation in cells cultured in a medium of the present invention, wherein said cells are selected from the group consisting of acinar cells and cells derived from post-natal islets of Langerhans cells of the patient to obtain a duct-like structure; and

b) introducing the duct-like structure cells *in situ* in the patient, wherein the cells are expanded *in situ* and islet cell differentiation properties are induced *in situ* to become insulin-producing cells.

10. A method for the treatment of diabetes mellitus in a patient, which comprises the steps of

a) inducing cystic formation in cells cultured in a medium of the present invention, wherein said cells are selected from the group consisting of acinar cells and cells derived from post-natal islets of Langerhans cells of the patient to obtain a duct-like structure;

b) expanding *in vitro* the duct-like structure cells;

c) inducing *in vitro* islet cell differentiation properties of the expanded cells of duct-like structure to become insulin-producing cells; and

d) introducing the cells of step c) *in situ* in the patient, wherein the cells produce insulin *in situ*.

11. A medium for inducing islet neogenesis from duct-like structure, which comprises in a physiologically acceptable culture medium an effective amount of at least one islet neogenesis inducer compound selected from the group consisting of gastrin, hepatocyte growth factor (HGF), epidermal growth factor, transforming growth factor-β1, transforming growth factor-β2, transforming growth factor-β3, insulin-like growth factor-1, insulin-like growth factor-2, insulin, nerve growth factor, keratinocyte growth factor, nicotimanide and insulin-transferrin-

sodium selenite.

12. A medium according to claim 11, wherein said medium comprises in a physiologically acceptable culture medium an effective amount of gastrin in association with an effective amount of HGF.

13. A medium according to claim 11, wherein said culture medium comprises DMEM/F12 supplemented with an effective amount of fetal calf serum.

14. A method for inducing islet neogenesis from duct-like structure, said method comprising the step of treating said duct-like structure with the medium of claim 11.